No. 8200086

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Pioneer Hi-Bred International, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *Eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IT IS REQUIRED THAT UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'2369'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office *to be affixed at the City of* Washington, D.C. *this* 23rd *day of* September *in the year of our Lord one thousand nine hundred and* eighty-two

Attest:

Kenneth [illegible]

Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

John R Block

Secretary of Agriculture

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

FORM APPROVED
OMB NO. 40-R3822

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

1a. TEMPORARY DESIGNATION OF VARIETY	1b. VARIETY NAME	FOR OFFICIAL USE ONLY
W7724	2369	PV NUMBER 8200086

2. KIND NAME	3. GENUS AND SPECIES NAME	FILING DATE	TIME
Wheat	*Triticum aestivum* L.	3/22/82	12 noon A.M. P.M.
		FEE RECEIVED	DATE
		$ 500.00	3/22/82
		$ 250.00	7/19/82

4. FAMILY NAME (BOTANICAL)	5. DATE OF DETERMINATION
gramineae	October, 1978

6. NAME OF APPLICANT(S)	7. ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)	8. TELEPHONE AREA CODE AND NUMBER
~~Pioneer Hi-Bred Int'l., Inc.~~ NDSU RESEARCH FOUNDATION ~~Plant Breeding Division~~ ~~Dept. of Cereal Seed Breeding~~	P.O. BOX 5014 ~~Rt. 2~~ FARGO, ND 58105 ~~Hutchinson, Kansas 67501~~	(701) 237-7654 ~~(316) 662-5439~~

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (*Corporation, partnership, association, etc.*)	10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION	11. DATE OF INCORPORATION
Corporation	Iowa May, 1926	May, 1926

12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS: ~~Dr. Charles Hayward~~ ~~Pioneer Hi-Bred International, Inc.~~ ~~Rt. 2~~ ~~Hutchinson, Kansas 67501~~ DR. H.R. LUND NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION P.O. BOX 5435 FARGO, ND 58105

13. **CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:**

- [X] 13A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
- [X] 13B. Exhibit B, Novelty Statement.
- [X] 13C. Exhibit C, Objective Description of the Variety *(Request form from Plant Variety Protection Office.)*
- [X] 13D. Exhibit D, Additional Description of the Variety.

14a. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a). (If "Yes," answer 14B and 14C below.)* [X] YES [ ] NO

14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?	14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED?
[X] YES [ ] NO	[X] FOUNDATION [X] REGISTERED [X] CERTIFIED

15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? [ ] YES [X] NO *(If "Yes," give name of countries and dates.)*

15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? [ ] YES [X] NO *(If "Yes," give name of countries and dates.)*

16. ~~DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? [ ] YES [ ] NO~~

17. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

March 17, 1982 (DATE) — Charles F. Hayward (SIGNATURE OF APPLICANT)

March 17, 1982 (DATE) — * Dale L. Porter (jmf) (SIGNATURE OF APPLICANT)

FORM GR-470 (1-78) *Legal representative for Pioneer Hi-Bred International, Inc.

13A. Exhibit A. Origin and Breeding History of 2369 Spring Wheat

2369 was developed by Pioneer Hi-Bred International, Inc., Plant Breeding Division, Glyndon Cereal Seed Research Station, Route 1, Box 128A, Glyndon, Minnesota 56547.

The abbreviated parentage of 2369 is: Era/3/TZPP/Son 64//Chris. A selection was made from a CIMMYT (International Maize and Wheat Improvement Center, Mexico) cross No. 19021 TZPP x Son 64 4M-3Y-102M-100Y-100C. This was then crossed with the Minnesota line Chris (CI 13751). A pure line selection from this cross was then used as the male parent in a cross with Era in 1973-74.

The procedure used to develop 2369 from the time of the final cross was as follows:

1974.....F_1 generation.

1975.....F_2 generation; space planted and single plant selections made at Casselton, North Dakota.

1976.....F_3 generation; single plant selections grown in mini-plots at Casselton, North Dakota. Single plant selections were again made.

1977.....F_4 generation; mini-plots were grown in an observation nursery at Glyndon and selected lines were bulk harvested and weighed.

1977-78...F_5 generation; 2369 was advanced a generation in the winter nursery at Yuma, Arizona.

1978.....F_6 generation; 2369 was grown in Preliminary Variety Trials under the experimental number W7724 at five locations in North Dakota, Minnesota and South Dakota. Agronomic, disease and quality determinations were made.

1979.....F_7 generation; 2369 was evaluated in the Elite Variety Trial at 10 locations in North Dakota, Minnesota and South Dakota. Full milling and baking tests were conducted at Pioneer's quality laboratory at Hutchinson, Kansas and by North Dakota State University, Fargo, North Dakota. 200 head selections were made from a pure seed bulk at Glyndon, Minnesota.

1979-80...F_8 generation; 200 head rows were grown at Yuma, Arizona and 'off-types' were discarded.

1980.....F_9 generation; second year of Elite testing at 10 locations. Seed from the Yuma (F_8) head rows was planted in progeny plots under isolation from other wheat. Any plots showing variability were discarded. Seed of the uniform plots was then bulked.

1980-81...F_{10} generation; a three-acre increase of breeder's seed was grown at Yuma, Arizona.

13A. Exhibit A continued.

1981.....F_{11} generation; third year of Elite testing at 11 locations. Independent milling and baking tests were conducted by North Dakota State University for the third year. A 40-acre foundation seed field was grown near Moorhead, Minnesota, and the commercial number 2369 was assigned to the line W7724, with sales of certified seed projected for the spring of 1984.

2369 has shown very good uniformity and stability for all traits as described in Schedule C. It is moderately sensitive to short photoperiods, and would be intermediate between the parents Era (sensitive) and Chris (Table 1). Breeder's seed is being maintained at the Glyndon Cereal Seed Research Station.

13B. Exhibit B. Novelty Statement

Pioneer Hi-Bred International, Inc., Plant Breeding Division, believes it is the sole, original and first breeder of the 2369 variety of spring wheat for which it solicits a certificate of protection.

Exhibits 13C and 13D provide information that should aid in identifying 2369. In Exhibit 13C, Item 20, Era is cited as the variety that most closely resembles 2369. However, the following characters would clearly differentiate 2369 from Era:

1. 2369 is 4 days earlier than Era in flowering, and 2.5 days earlier at physiologic maturity, on average.
2. 2369 is substantially less sensitive to photoperiod than Era. Data derived from two years of testing are provided in Table 1.
3. Color of the heads of 2369 at harvest is yellow, compared with those of Era which are more white in color.
4. The beak length on the glumes of 2369 averages 6-7 mm, compared with 3 mm for Era.

2369 has shown uniformity and stability for all traits as described in Exhibit C (Form GR-470-6)--"Objective Description of Variety." On very rare occasions (< 1/10,000) a slightly taller head may be encountered.

FORM APPROVED. OMB NO. 40-R3712

FORM GR-470-6
(2-15-73)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY

WHEAT *(TRITICUM SPP.)*

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)
Pioneer Hi-Bred International, Inc.

ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*
Plant Breeding Division
Dept. of Cereal Seed Breeding
Rt. 1, P. O. Box 128A, Glyndon, Minnesota 56547

FOR OFFICIAL USE ONLY

PVPO NUMBER 8200086

VARIETY NAME OR TEMPORARY DESIGNATION
2369

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:

[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

[1] 1 = SPRING 2 = WINTER 3 = OTHER *(Specify)* _____

[2] 1 = SOFT 2 = HARD 3 = OTHER *(Specify)* _____

[2] 1 = WHITE 2 = RED 3 = OTHER *(Specify)* _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

[0][5][5] FIRST FLOWERING

[0][5][8] LAST FLOWERING

4. MATURITY *(50% Flowering)*:

[0][3] NO. OF DAYS *EARLIER* THAN .....

[3] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

[ ][ ] NO. OF DAYS *LATER* THAN .....

[ ]

5. PLANT HEIGHT *(From soil level to top of head)*:

~~[9][7][8]~~ [8] 4/7/82 CM. HIGH (GD)

[ ][ ] CM. TALLER THAN .....

[ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

[1][6] CM. SHORTER THAN .....

[3]

6. PLANT COLOR AT BOOTING *(See reverse)*:

[2] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:

[1] 1 = YELLOW 2 = PURPLE

8. STEM:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[1] Waxy bloom: 1 = ABSENT 2 = PRESENT

[2] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT

[1] Internodes: 1 = HOLLOW 2 = SOLID

[0][3] NO. OF NODES *(Originating from node above ground)*

[2][0] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[1] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

[2] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER *(Specify)*: _____

[2] Flag leaf: 1 = NOT TWISTED 2 = TWISTED

[2] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT

[1][3] MM. LEAF WIDTH *(First leaf below flag leaf)*

[2][4] CM. LEAF LENGTH *(First leaf below flag leaf)*:

FORM GR-470-6 (REVERSE) 0200086

11. HEAD:

[2] Density: 1 = LAX 2 = DENSE

[1] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER *(Specify)* _____

[4] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[2] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER *(Specify)*: _____

[0][6] CM. LENGTH [1][5] MM. WIDTH

12. GLUMES AT MATURITY:

[2] Length: 1 = SHORT *(CA. 7 mm.)* 2 = MEDIUM *(CA. 8 mm.)* 3 = LONG *(CA. 9 mm.)*

[2] Width: 1 = NARROW *(CA. 3 mm.)* 2 = MEDIUM *(CA. 3.5 mm.)* 3 = WIDE *(CA. 4 mm.)*

[4] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[2] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

[1] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[1] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

[3] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[1] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[3] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

[2] Brush: 1 = NOT COLLARED 2 = COLLARED

[3] Phenol reaction *(See instructions)*: 1 = IVORY 2 = FAWN 3 = L.T. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER *(Specify)* _____

[0][6] MM. LENGTH [0][3] MM. WIDTH [3][2] GM. PER 1000 SEEDS

17. SEED CREASE:

[1] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

Narrow

[1] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

Shallow

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[2] STEM RUST *(Races)* 151QSH 15 TNM

[2] LEAF RUST *(Races)* Local

[0] STRIPE RUST *(Races)* _____

[2] LOOSE SMUT

[0] POWDERY MILDEW

[0] BUNT

[2] OTHER *(Specify)* Pyrenophora tritici repentis (tan spot)

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] SAWFLY

[0] APHID *(Bydv.)*

[0] GREEN BUG

[0] CEREAL LEAF BEETLE

[0] OTHER *(Specify)* _____

HESSIAN FLY RACES: [ ] GP [ ] A [ ] B [ ] C [ ] D [ ] E [ ] F [ ] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Era	Seed size	Era
Leaf size	Butte	Seed shape	Era
Leaf color	Era	Coleoptile elongation	Era
Leaf carriage	Era	Seedling pigmentation	Era

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. *(See attachment.)*

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

13D. Exhibit D. Botanical Description of 2369

2369 is a common Hard Red Spring Wheat, *Triticum aestivum* L.

2369 averaged two days earlier than Olaf and four days earlier than Era in flowering, based upon nursery trial data during the three-year period 1979-81. At Glyndon, Minnesota, the average number of days from seeding to first flowering was 55.4, 57.3 and 59.2 for 2369, Olaf and Era respectively (mean of six location/years). The corresponding averages for days from seeding to physiologic maturity were 91.1, 93.0 and 93.4 for 2369, Olaf and Era respectively.

2369 is a semidwarf variety with an average height of 78 cm, the same as Era and PR2360, and about 3 cm shorter than Olaf.

At boot stage the plant color of 2369 is green, similar to Era and PR2360, and anthocyanin is not present in the stems. In the late boot stage there is no waxy bloom on the stem, in contrast to PR2360 which has a light waxy bloom. Auricles are glabrous and anthocyanin is absent. Internodes of 2369 are hollow. Stems are strong, as the high lodging score suggests (Table 2), and are yellow at harvest. Normally three stem nodes are present above ground. Internode length between the flag leaf and the leaf below is 20 cm.

Leaves are green at the booting stage, and the flag leaf is recurved and twisted. A waxy bloom appears on the flag leaf sheath. Hairs are present on the first leaf sheath. The first leaf below the flag leaf averages 13 mm wide and 24 cm long.

Spikes are mid-dense, tapering, awned, yellow and average 6 cm in length and 15 mm in width. However, both spike length and width vary with season, location and plant population. Glumes are medium width and medium length with square shoulders. Beaks are acute.

Coleoptile color is white. Seedling anthocyanin is absent.

Kernels are red in color, ovate in shape with rounded cheeks and a narrow, shallow crease. Kernels average 6 mm long and 3 mm wide, and 1000 kernels weigh about 32 grams. Of the current commercial spring wheats, Era bears the closest resemblance to 2369 in kernel type. The phenol reaction is light brown.

2369 has not been tested for reaction to Hessian fly, sawfly, aphids or cereal leaf beetle.

2369 is resistant to the major stem rust races (including 151QSH and 15 TNM), tan spot (*Pyrenophora tritici repentis*), and loose smut. A slow-

13D. Exhibit D continued.

rusting reaction confers effective field resistance to prevalent leaf rust races and 2369 has also shown tolerance to bacterial leaf blight (*Xanthomonas translucens* f. sp. *undulosa*). It has not been tested for stripe rust, powdery mildew or bunt, diseases that do not normally occur in the northern plains region.

2369 has an excellent yield record when compared with the current commercial hard red spring wheats (Table 2), and with PR2360 (the preceding Pioneer spring wheat). Yields have been consistently high over a range of environmental conditions, and it has been a top-yielding line when late planted. Added advantages include earlier maturity (as defined by harvest moisture) than Butte, Len, Olaf and Era, and 2369 has better resistance to Tan Spot and bacterial leaf blight than Olaf, Len and Butte.

2369 has produced a good milling extraction (superior to Olaf but less than Era). Flour protein, although 1% lower than Len, is higher than that of Era and PR2360. The main disadvantages have been a lower water absorption and long mixing requirement compared with Waldron. These data are provided in Tables 3 and 4.

Table 1. Classification of 2369 and standard HRS wheat varieties for photoperiod response based on the effects of a five-hour night-interruption by a field lighting system at Yuma, Arizona, 1979-80 and 1980-81.

Variety	Delay (Days) Due to Absence of Lights*		
	50% Heading	Phys. Maturity	Total Delay
		1979-80	
2369	16	14	30
Waldron	27	30	57
Olaf	24	29	53
Era	21	19	40
Butte	19	13	32
PR2360	17	19	36
		1980-81	
2369	14	10	24
Waldron	35	31	66
Olaf	35	24	59
Era	28	23	51
Butte	18	13	31
PR2360	11	9	20

*Seeded at Yuma, November 6, 1979 and November 4, 1980

Night interruption commenced three weeks after seeding
--Simulated 'long day' = 5 hours of illumination, 9:30 p.m.-2:30 a.m.
--Short day = no lights

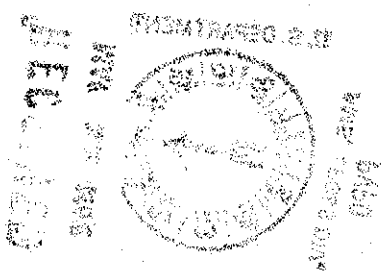

Table 2. Performance of 2369 and standard varieties grown in elite yield trials at 10 locations during the years 1979-1981.

Variety	Days to 50% Head*	Days to Maturity*	Height (in)	Lodging Score*	Yield - bu/acre Region 1**	Yield - bu/acre Region 2**	Test Wt. lb/bu	Harv. Mst.	Leaf Rust	Stem Rust
2369	56.2	93.5	30.8	8	55.6	47.9	57.4	13.5	MS-R	R
Olaf	58.1	95.0	32.4	8	52.1	46.1	56.6	15.6	MS-R	R
Era	60.4	96.2	31.0	6	47.9	43.9	54.9	15.8	MS-R	R
Butte	53.5	91.8	33.7	5	50.3	46.6	57.7	14.3	MS-R	R
PR2360	57.2	94.2	31.2	8	53.9	46.1	55.6	15.0	MS-R	MR
LSD (.05)	0.9	1.3	0.5	-	2.7	2.9	0.6	0.6	--	--

*Number of days from seeding to 50% heading
Number of days from seeding to physiologic maturity
Lodging score: Scale 1-9 where 9 = excellent and 1 = poor

**Region 1: Minnesota and Red River Valley locations in North Dakota (six locations)
Region 2: Locations west of the Red River Valley in North Dakota, plus South Dakota (four locations)

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Table 3. Results of quality testing of 2369 by Pioneer Quality Laboratory.

Varieties Compared	Test Wt. lb/bu	Wheat Protein	Flour Protein	Flour Yield	Break Flour	Water Abs. (%)	Loaf Volume	Peak* Time	Mixing* Tolerance
				1979					
2369	56.1	15.5	13.9	68.2	30.6	63.0	69.5	4.5	5
Olaf	54.1	17.1	14.8	66.1	27.3	68.0	86.0	4.5	5
Era	51.4	15.3	13.5	67.8	29.5	64.0	72.0	4.5	4
Butte	56.1	16.5	14.4	67.1	29.9	67.0	77.0	3.5	3
PR2360	52.4	14.8	13.3	69.8	30.9	64.0	68.0	4.0	3
				1980					
2369	57.4	16.6	14.5	68.7	--	63.0	84.0	5.5	5
Olaf	56.7	17.9	14.6	66.7	--	65.0	86.0	4.5	6
Era	56.3	15.9	13.8	72.3	--	63.0	74.0	3.5	3
Butte	58.2	17.4	14.7	69.8	--	65.0	78.5	3.3	2
PR2360	56.4	16.0	13.8	71.9	--	62.0	77.0	3.7	3

Notes: (1) 9-location composite samples were used in 1979 and 1980
(2) Locations were: Minnesota - Glyndon (early and late planted), Fergus Falls, Hancock
North Dakota - Gilby, Langdon (1979 only), Casselton (1980 only), Glenfield, Bismarck
South Dakota - Frankfort
(3) *Peak time and mixing tolerance were determined with a mixograph. Time = minutes; Tolerance = Scale of 1-9 where 9 = excellent and 1 = very poor.

8200086

Table 4. Results of quality testing of 2369 by North Dakota State University, Fargo, North Dakota.

Varieties Compared	Test Wt. (lb/bu)	Wheat Prot.	Flour Prot.	Flour Yield	Ash (%)	Water Abs.	Loaf Vol.	Grain Text.	Crumb Color	Farin. Class.	Peak* Time	Mix.* Tol.	MTI*
						1980							
2369	59.3	14.6	13.6	68.9	0.43	60.9	920	8.0	8.5	8AB	23.5	30.0	10
Len	58.5	15.4	14.6	70.0	0.43	64.1	950	8.0	7.0	8	14.5	18.0	10
Era	58.6	13.7	12.9	70.8	0.47	61.1	895	7.5	8.0	7	11.5	16.0	15
						1981							
2369	58.0	14.5	13.4	69.4	0.43	59.8	965	7.5	7.5	8AB	30.5	39.0	10
Len	57.2	15.7	14.7	69.5	0.46	64.1	1000	8.5	7.0	8	14.5	17.0	10
Era	56.2	13.6	12.9	70.8	0.47	58.9	930	8.0	7.5	7	9.0	15.0	15

Notes: (1) A 9-location composite was used in 1980, and a 10-location composite in 1981.
(2) Locations used were: Minnesota - Glyndon (early and late planted), Fergus Falls and Hancock
North Dakota - Casselton, Gilby, Drayton (1981 only), Glenfield and Bismarck
South Dakota - Frankfort
(3) *Peak time and mixing tolerance were determined with a farinograph. Time = minutes; Tolerance = time in minutes that curve remains horizontal.